

REMARKS

The final Office Action dated June 17, 2009 has been carefully reviewed and the foregoing amendment has been made in consequence thereof.

Claims 1, 3-20, 22, and 23 are now pending in this application. Claims 1-20 stand rejected. Claim 2 has been cancelled.

The rejection of Claims 1-21 under 35 U.S.C. § 103(a) as being unpatentable over Applicants' Admitted Prior Art (hereinafter referred to as "AAPA") in view of U.S. Patent 7,058,040 to Schmidt (hereinafter referred to as "Schmidt") is respectfully traversed.

Independent Claim 1 has been amended to recite, at least in part, "providing a central processing unit (CPU) configured for a *master* PLC . . . providing a means for wireless radio frequency communications between the PLC and a plurality of remote *slave* devices...." (Emphasis added) Applicants respectfully submit that such a recitation is described in the specification at, for example, paragraph [0020]. Specifically, paragraph [0020] describes integrating "a Bluetooth transmitter/receiver in the main PLC rack (master PLC) and each expansion rack. The master PLC can then communicate to each slave Bluetooth device, transferring information between the devices. While this example uses Bluetooth, it may also be accomplished using wireless Ethernet (IEEE 802.11) or cellular communications." Moreover, Applicants respectfully submit that neither AAPA nor Schmidt, considered alone or in combination, describes or suggests such a recitation. Rather, AAPA describes sending information to be wirelessly communicated from a CPU across the PLC module bus to a wireless communication module, and then transmitting the information to a device, such as another PLC, a remote rack, a computer, and/or a remote input/output (I/O) device, and Schmidt describes a device that facilitates reducing radio frequency interference between Bluetooth, cellular, and 802.11 signals using a multi-mode communicator device.

In addition, Claim 1 has been amended to recite "operationally coupling the means for wireless radio frequency communications to the CPU by mounting the means and the CPU to a CPU card...." Independent Claim 7 has been similarly amended. Such a recitation is also

recited in independent Claim 9 in its current form. Applicants respectfully submit that such a recitation is described in the specification at, for example, paragraph [0017]. Specifically, paragraph [0017] describes, with reference to Figure 2, “a side view of an integrated PLC wireless communication system 30 including a backplane 32 with a CPU card 34 mounted thereon. A CPU 36 and a wireless radio frequency transmitter/receiver 38 are mounted on CPU card 34.” Moreover, Applicants respectfully submit that neither AAPA nor Schmidt, considered alone or in combination, describes such a recitation. Rather, AAPA merely describes a CPU coupled to a CPU card, and a separate wireless communication module that communicates with the CPU via a PLC module bus, and Schmidt describes a multi-mode wireless communicator device that is fabricated on a single integrated chip to facilitate reducing radio frequency interference between Bluetooth, cellular, and 802.11 signals. However, in contrast to Applicants’ claimed invention, neither AAPA nor Schmidt, considered alone or in combination, describes or suggests a PLC that includes a CPU card having a CPU and means for wireless radio frequency communication each mounted thereto.

Moreover, if art “teaches away” from a claimed invention, such a teaching supports the nonobviousness of the invention. See *U.S. v. Adams*, 148 USPQ 479 (1966); *Gillette Co. v. S.C. Johnson & Son, Inc.*, 16 USPQ2d 1923, 1927 (Fed. Cir. 1990). In light of this standard, it is respectfully submitted that the cited art, as a whole, is not suggestive of the presently claimed invention. Specifically, Applicants respectfully traverse the assertion on page 5 of the final Office Action that “[m]ounting a Bluetooth transceiver as taught by Schmidt onto a CPU mounted on a CPU card 14 of the APA would enable wireless communication of the CPU card to other wireless communication modules, i.e., module 18, without using the PLC module bus...” Rather, Applicants submit that AAPA distinctly describes that communication between a CPU and a wireless communication module occurs through a PLC module bus. Specifically, paragraph [0016] of the specification describes that “information that is received by wireless communication module 18 *is sent by wireless communication module 18 across the PLC module bus to the CPU.*” (Emphasis added) Moreover, Applicants submit that Schmidt does not describe, suggest, or even mention coupling both a CPU and means for wireless radio frequency communication to a single CPU card, which is then coupled to a PLC backplane. Rather, Applicants submit that, at column 5,

lines 38-39, Schmidt describes a multi-mode wireless communicator device that is fabricated *on a single silicon integrated chip*. As such, Applicants submit that both AAPA and Schmidt teach away from the claimed invention. Specifically, as shown above, AAPA explicitly requires that communication between the CPU and the wireless communication module occurs through a PLC bus, which directly teaches away from the claimed invention. Moreover, Schmidt explicitly requires that the multi-mode communicator device, and all components included therein, is fabricated on a single silicon integrated chip. Accordingly, combining the teachings of AAPA and Schmidt would provide an unworkable product because each requires communications between components that is contrary to communications in the claimed invention, i.e., between a CPU and means for wireless radio frequency communication that is operationally coupled to the CPU on a CPU card.

Furthermore, independent Claim 15 has been amended to recite, at least in part, “a plurality of remote wireless devices . . . an access point comprising a radio frequency receiver and a radio frequency transmitter . . . a programmable logic controller (PLC) comprising: a central processing unit (CPU) . . . means for wireless radio frequency communications operationally coupled to said CPU . . . said PLC configured to communicate with said plurality of remote wireless devices via said access point.” Applicants respectfully submit that such a recitation is described in the specification at, for example, paragraph [0024]. Specifically, paragraph [0024] describes, with reference to Figure 4 that “if one of the main racks 46 can act as an access point, each component, such as the remote rack 50 and remote I/O 54, can communicate directly with the PLC main rack 46. For example, Bluetooth applications can communicate directly to the PLC main rack 46.” Moreover, Applicants respectfully submit that neither AAPA nor Schmidt, considered alone or in combination, describes or suggests such a recitation. Rather, AAPA merely describes a CPU coupled to a CPU card, and a separate wireless communication module that communicates with the CPU via a PLC module bus, and Schmidt describes a multi-mode wireless communicator device that is fabricated on a single integrated chip to facilitate reducing radio frequency interference between Bluetooth, cellular, and 802.11 signals.

AAPA describes a programmable logic controller (PLC) wireless communication system (10) including a backplane (12) and a central processing unit (CPU) card (14) mounted thereon. A CPU is mounted on the CPU card (14). Backplane (12) includes a plurality of module connectors (16) which accept modules such as a wireless communication module (18). Module connectors (16) communicate with the CPU via a PLC module bus. During normal operation, the CPU sends information to be wirelessly communicated across the PLC module bus to wireless communication module (18). Additionally, information that is received by wireless communication module (18) is sent by wireless communication module (18) across the PLC module bus to the CPU. Notably, and as discussed in greater detail above, AAPA does not describe or suggest providing a CPU configured for a master PLC, and providing a means for wireless radio frequency communications between the PLC and a plurality of remote slave devices. Moreover, AAPA does not describe or suggest operationally coupling the means for wireless radio frequency communications to the CPU by mounting the means and the CPU to a CPU card. Further, AAPA does not describe or suggest a PLC system that includes a plurality of remote wireless devices, an access point, and a PLC including a CPU, and means for wireless radio frequency communications operationally coupled to the CPU, wherein the PLC is configured to communicate with the plurality of remote wireless devices via the access point.

Schmidt describes a multi-mode wireless communicator device (100) that is fabricated on a single integrated chip to facilitate reducing radio frequency interference between Bluetooth, cellular, and 802.11 signals. The device (100) includes a plurality of radio frequency circuits including a cellular radio core (110), and a plurality of short-range wireless transceiver cores (130) such as Bluetooth cores and/or 802.11 cores. When in use, the device (100) automatically detects a suitable radio frequency circuit to use for communication. For example, when during an activity a user disconnects from a wired local area network cable such as an Ethernet cable, the device (100) initiates a short-range connection using, for example, a Bluetooth connection in order to continue the activity. When the user moves out of range of such a short-range connection, the device (100) initiates a longer-range connection using, for example, a cellular telephone connection in order to continue the activity. When the user re-enters a zone suitable for use of a different short-

range connection, such as an 802.11 connection, the device (100) initiates such a connection in order to continue the activity. During the transitions between connection types, the device (100) automatically powers down unused radio frequency circuits. Notably, Schmidt does not describe or suggest providing a CPU configured for a master PLC, and providing a means for wireless radio frequency communications between the PLC and a plurality of remote slave devices. Moreover, Schmidt does not describe or suggest operationally coupling the means for wireless radio frequency communications to the CPU by mounting the means and the CPU to a CPU card. Further, Schmidt does not describe or suggest a PLC system that includes a plurality of remote wireless devices, an access point, and a PLC including a CPU, and means for wireless radio frequency communications operationally coupled to the CPU, wherein the PLC is configured to communicate with the plurality of remote wireless devices via the access point.

Claim 1 recites a method for manufacturing a programmable logic controller (PLC) system, wherein the method includes “providing a central processing unit (CPU) configured for a master PLC including a PLC module bus for coupling at least one PLC module to the CPU; providing a means for wireless radio frequency communications between the PLC and a plurality of remote slave devices; and operationally coupling the means for wireless radio frequency communications to the CPU by mounting the means and the CPU to a CPU card, the CPU card mounted on a backplane of a rack such that the means and the CPU communicate without using the PLC module bus.”

Neither AAPA nor Schmidt, considered alone or in combination, describes or suggests a method, as recited in Claim 1. More specifically, neither AAPA nor Schmidt, considered alone or in combination, describes or suggests providing a CPU configured for a master PLC, and providing a means for wireless radio frequency communications between the PLC and a plurality of remote slave devices. Moreover, neither AAPA nor Schmidt, considered alone or in combination, describes or suggests operationally coupling the means for wireless radio frequency communications to the CPU by mounting the means and the CPU to a CPU card, wherein the CPU card is mounted on a backplane of a rack such that the means and the CPU communicate without using the PLC module bus. Rather, AAPA

describes a CPU coupled to a CPU card, and a separate wireless communication module that communicates with the CPU via a PLC module bus, and Schmidt describes a multi-mode wireless communicator device that is fabricated on a single integrated chip to facilitate reducing radio frequency interference between Bluetooth, cellular, and 802.11 signals.

Accordingly, for at least the reasons set forth above, Claim 1 is submitted to be patentable over AAPA in view of Schmidt.

Claim 2 has been cancelled. Claims 3-6 depend from independent Claim 1. When the recitations of Claims 3-6 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 3-6 likewise are patentable over AAPA in view of Schmidt.

Claim 7 recites a method for communicating, wherein the method includes “providing a plurality of wireless communication devices; sending wireless messages from the plurality of wireless communication devices to a programmable logic controller (PLC) having a central processing unit (CPU) and a PLC module bus for coupling at least one PLC module to the CPU; and operationally coupling a means for wireless radio frequency communications to the CPU by mounting the means and the CPU to a CPU card, wherein the CPU card is mounted on a backplane of a rack, wherein the means for wireless radio frequency communications and the CPU communicate without using the PLC module bus.”

Neither AAPA nor Schmidt, considered alone or in combination, describes or suggests a method for communicating, as recited in Claim 7. More specifically, neither AAPA nor Schmidt, considered alone or in combination, describes or suggests operationally coupling a means for wireless radio frequency communications to a CPU by mounting the means and the CPU to a CPU card, wherein the CPU card is mounted on a backplane of a rack, and wherein the means and the CPU communicate without using the PLC module bus. Rather, AAPA describes a CPU coupled to a CPU card, and a separate wireless communication module that communicates with the CPU via a PLC module bus, and Schmidt describes a multi-mode wireless communicator device that is fabricated on a single integrated

chip to facilitate reducing radio frequency interference between Bluetooth, cellular, and 802.11 signals.

Accordingly, for at least the reasons set forth above, Claim 7 is submitted to be patentable over AAPA in view of Schmidt.

Claim 8 depends from independent Claim 7. When the recitations of Claim 8 are considered in combination with the recitations of Claim 7, Applicants submit that dependent Claim 8 likewise is patentable over AAPA in view of Schmidt.

Claim 9 recites a Programmable Logic Controller (PLC) that includes “a backplane comprising at least one module connector and a module bus; a central processing unit (CPU) card mounted on said backplane; a CPU mounted on said CPU card; and a transmitter/receiver mounted on said CPU card, said transmitter/receiver operationally coupled to said CPU to communicate therebetween without using said module bus, wherein said PLC is configured to communicate with at least one controlled input/output module installed in a remote rack using said transmitter/receiver.”

Neither AAPA nor Schmidt, considered alone or in combination, describes or suggests a PLC, as recited in Claim 9. More specifically, neither AAPA nor Schmidt, considered alone or in combination, describes or suggests a CPU and a transmitter/receiver each mounted on a CPU card that is mounted to a backplane, wherein the CPU and the transmitter/receiver communicate without using a module bus provided within the backplane. Rather, AAPA describes a CPU coupled to a CPU card, and a separate wireless communication module that communicates with the CPU via a PLC module bus, and Schmidt describes a multi-mode wireless communicator device that is fabricated on a single integrated chip to facilitate reducing radio frequency interference between Bluetooth, cellular, and 802.11 signals.

Accordingly, for at least the reasons set forth above, Claim 9 is submitted to be patentable over AAPA in view of Schmidt.

Claims 10-14 depend from independent Claim 9. When the recitations of Claims 10-14 are considered in combination with the recitations of Claim 9, Applicants submit that dependent Claims 10-14 likewise are patentable over AAPA in view of Schmidt.

Claim 15 recites a programmable logic controller (PLC) system that includes “a plurality of remote wireless devices; an access point comprising a radio frequency receiver and a radio frequency transmitter; and a programmable logic controller (PLC) comprising: a central processing unit (CPU) and a PLC module bus for coupling at least one PLC module to said CPU; and means for wireless radio frequency communications operationally coupled to said CPU, wherein said CPU is mounted on a backplane of said PLC, wherein said means and said CPU are each configured to communicate without using said PLC module bus, said PLC configured to communicate with said plurality of remote wireless devices via said access point.”

Neither AAPA nor Schmidt, considered alone or in combination, describes or suggests a PLC system, as recited in Claim 15. More specifically, neither AAPA nor Schmidt, considered alone or in combination, describes or suggests a PLC system that includes an access point having a radio frequency receiver and a radio frequency transmitter. Moreover, neither AAPA nor Schmidt, considered alone or in combination, describes or suggests a PLC that includes a CPU and a means for wireless frequency communications operationally coupled to the CPU, wherein the means and the CPU are each configured to communicate without using a PLC module bus, and wherein the PLC is configured to communicate with a plurality of remote device via the access point. Rather, AAPA describes a CPU coupled to a CPU card, and a separate wireless communication module that communicates with the CPU via a PLC module bus, and Schmidt describes a multi-mode wireless communicator device that is fabricated on a single integrated chip to facilitate reducing radio frequency interference between Bluetooth, cellular, and 802.11 signals.

Accordingly, for at least the reasons set forth above, Claim 15 is submitted to be patentable over AAPA in view of Schmidt.

Claims 16-20 depend from independent Claim 15. When the recitations of Claims 16-20 are considered in combination with the recitations of Claim 15, Applicants submit that dependent Claims 16-20 likewise are patentable over AAPA in view of Schmidt.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 1-20 be withdrawn.

In view of the foregoing amendment and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action are respectfully solicited.

Respectfully submitted,



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